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PRUNING THE SEEDLESS GRAPES

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The general principles of vine pruning are the same for all varieties. These and the general practice of pruning have been quite

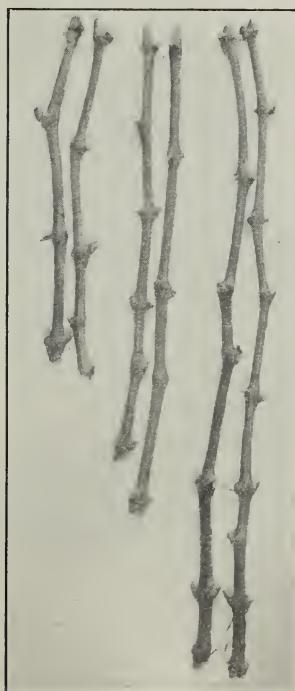


Fig. 1.—Forms of cuttings.

fully discussed in Bulletins 241 and 246 of this Station. In this circular will be given simply specific directions for the methods of pruning which have given the best results with seedless raisin grapes.

1. TREATMENT OF YOUNG VINES

First Year.—Cuttings are made 12, 15, or 18 inches long; the shorter for nursery planting or moist soil; the longer for planting in the vineyard and where the soil lacks moisture (see Fig. 1). Well-grown and well-ripened laterals make better cuttings than over-grown, long-jointed canes.

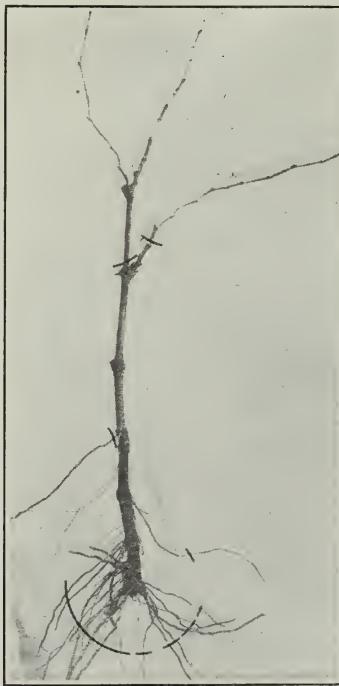


Fig. 2.—Pruning of rooted vine before planting.

One-year-old rooted vines are pruned to one cane, which is shortened to one or two buds. Surface roots are cut off entirely and the lower roots shortened to 1 to 4 inches, according to size (see Fig. 2). When planted, only the buds at the top are left above ground.

During the first growing-season (see Fig. 3), little pruning is done. With vines on resistant stocks, the stock suckers and scion roots must be carefully cut off clean. The removal of surface roots is also advisable in irrigated land.

In the first winter following planting, the vines (see Fig. 4a) are pruned to one cane, and this cane is shortened to two buds, exactly as was done with the young vine before planting (see Fig. 4b). The vines are then staked. The stakes used are only temporary and need not be more than three feet long and an inch and a half in diameter.



Fig. 3.—Growth during the first summer.

They should be driven about two inches from the vine on the leeward side so that the prevailing winds will press the growing vine against the stake.

Second Year.—During the second growing-season, the vines need careful and continual attention. Though only two well-defined buds have been left, many shoots will start. All but one or at most two of these are removed as soon as they have grown one or two inches.

This throws the energies of the vine into those left, which will therefore grow rapidly (see Fig. 5a).

As soon as one of the shoots has grown six to ten inches, it is tied loosely to the stake, and the other, together with any new shoots

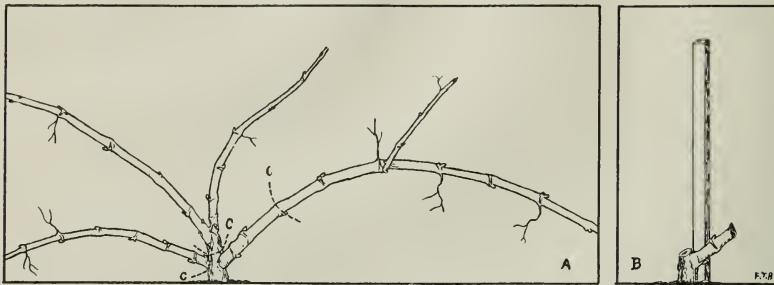


Fig. 4.—Vine at end of first growing season. *A*, before pruning; *c, c*, Places for making cuts; *B*, after pruning and staking.

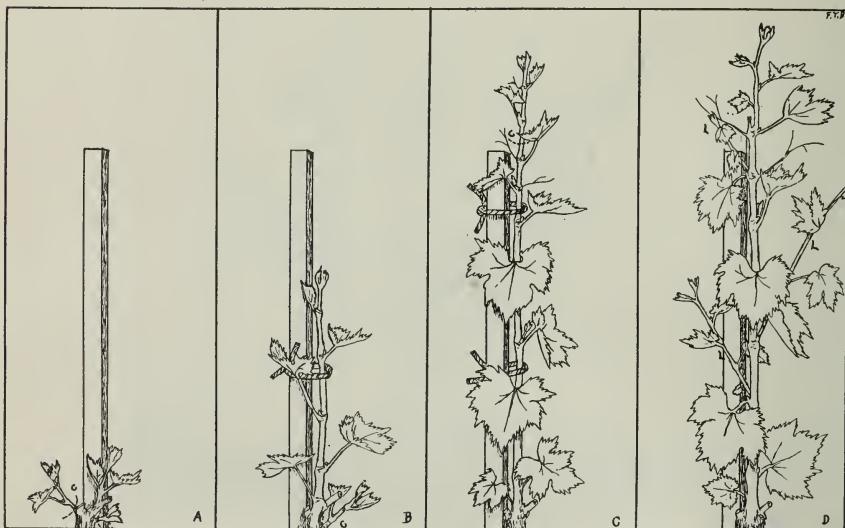


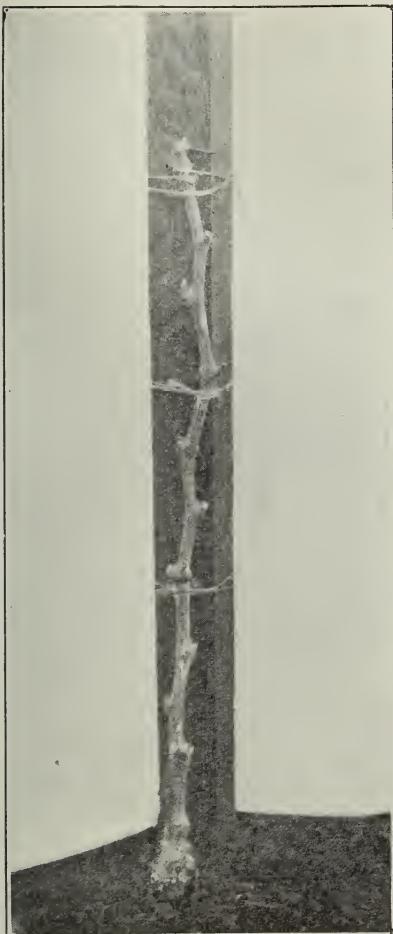
Fig. 5.—Growth and treatment of the vine during the second season. *c, c*, Place where shoots are removed; *L, L*, laterals.

which have started, are removed at the same time (see Fig. 5b).

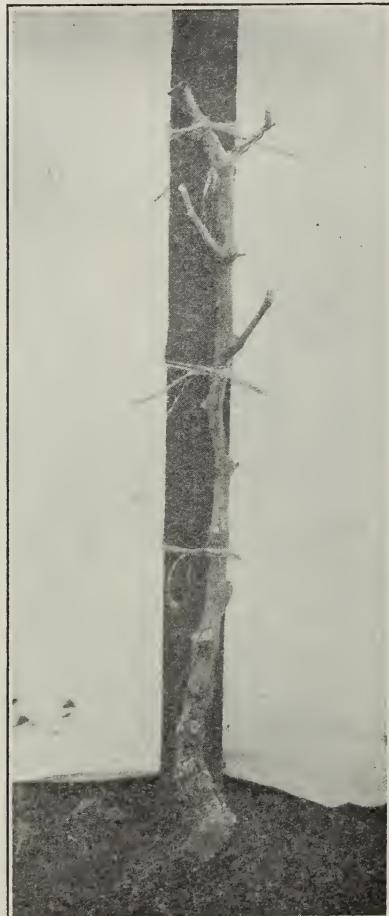
The single shoot will then grow rapidly and must be tied again higher (see Fig. 5c.)

When the shoot has grown one or two feet above the top of the short stake, it is topped at about three feet from the ground (see Fig. 5c).

This will force a growth of laterals (see Fig. 5*d*). If these laterals grow so large that they are in danger of being broken by the wind, they should be topped or pinched. All suckers from below ground should be carefully removed as soon as they appear.



A. Average vine.



B. Very vigorous vine.

Fig. 6.—Winter pruning second year.

The second winter pruning will be very simple if the summer work has been done properly. It consists in cutting back the single cane to a height of about eighteen inches (see Fig. 6*a*), leaving a full joint above the top bud. Where strong laterals have been produced, those on the upper part of the cane should be cut back to one

or two buds and the rest removed (see Fig. 6b). All the buds on the vine at this stage may be fruit buds and a good crop should be produced in the following autumn. Vines which have not made eighteen inches of vigorous, well-ripened cane should be cut back to *two buds* and treated as during the previous year. If any vines have been allowed to grow more than one cane, all should be removed *entirely*, except the strongest and best placed.

After pruning, the vines are carefully tied to the stake as shown in figure 6. Extra heavy binding twine is good for this purpose. The cane is tied firmly to the stake by passing a "half-hitch" around

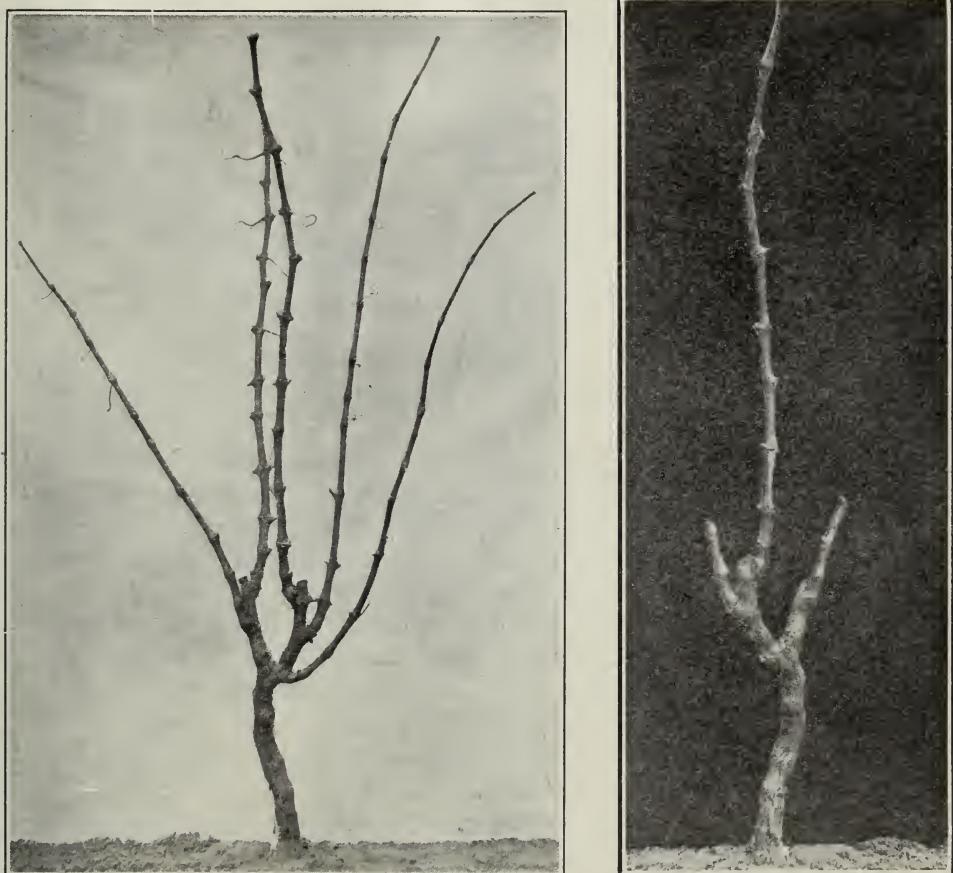


Fig. 7.—Growth and treatment of the vine during the third season. *T, T*, places where the vine is tied; *c, c*, shoots and tips removed; *B, B*, blossom branches.

the joint above the top bud. One or two ties are then made near the middle of the cane. These should be moderately loose to allow for growth of the cane and should *not pass around the cane*, or it will be choked.

Third Year.—As the buds start in the spring, the vines should be gone over several times and all shoots within six to ten inches of the ground rubbed off before they are more than two or three inches long (see Fig. 7a). This rubbing off of low buds will have to be repeated two or three times (see Fig. 7b). This will force all the growth into the upper shoots which will bear the crop and form the ultimate arms of the vine. When these upper shoots are fifteen to twenty inches

long, their extreme tips should be pinched off (see Fig. 7c). This will delay their lengthening and protect them from wind injury. All suckers from below ground and shoots on the lower part of the trunk should be carefully removed as soon as they appear.



a. Before pruning.

b. After pruning.

Fig. 8.—Winter pruning third year—one fruit cane and two spurs.

An example of the winter pruning at the end of the third year is shown in figure 8. It consists in leaving one or more fruit canes and two or more wood spurs. The number of canes and spurs is determined by the size and vigor of the individual vine. No invariable rule can be given. In the example shown, there are five well-developed canes on the unpruned vine. A vine having ten well-

developed canes should be allowed two fruit canes and four spurs. This is about the maximum for vines of this age. The most vigorous fruit canes should not be more than four feet long and those less vigorous should be from two to three feet. The spurs should all have two well-developed buds, not counting the base bud.

The spurs should always, whenever possible, be below the fruit canes, as shown in the figure. They should be so placed as to give the vine the required shape. The position of the fruit canes is less important, as they are removed the following year. The spurs should be arranged as much as possible in the plane of the trellis to be erected, that is, spread out like the ribs of a fan in the direction of the rows. This is very important as on the perfection with which this form is obtained depends the ease and cheapness of cultivation and the protection of the vine from cultivation injuries.

2. TRELLISING

As soon as the pruning is finished, the brush should be removed and the trellis erected.

The trellis consists of two wires stretched along the rows in the direction where the vines are closest together. The bottom wire is placed at twenty-four inches from the ground and the upper eighteen inches higher. A straining post is placed at each end of the row and a supporting stake at intervals in the row.

The stretch between posts should not be much more than 200 feet and less is better. A supporting stake every fifteen or twenty feet is sufficient. These stakes should be placed half way between two vines.

For straining posts, ordinary fence posts may be used, or 4×4 pieces of sawn redwood seven feet long. They may be set in concrete or held by a stone or concrete anchor or by a diagonal brace of $2 \times 4''$ redwood. For intermediate stakes, the ordinary six-foot split redwood stakes are best. No. 12 galvanized iron fencing wire is most commonly used. No. 14 is a little too light, especially for the lower wire. No. 11 for the bottom wire and No. 13 for the upper are good sizes.

The general plan of the trellis is shown in figure 9. The trellis should be erected and the vines attached to it before the buds commence to swell in the spring. It is best to leave the temporary stakes to support the vine for a year or two longer, as it is very important that the trunks should be straight and perfectly upright. Crooked, irregular, spreading vines interfere with cultivation, require a large

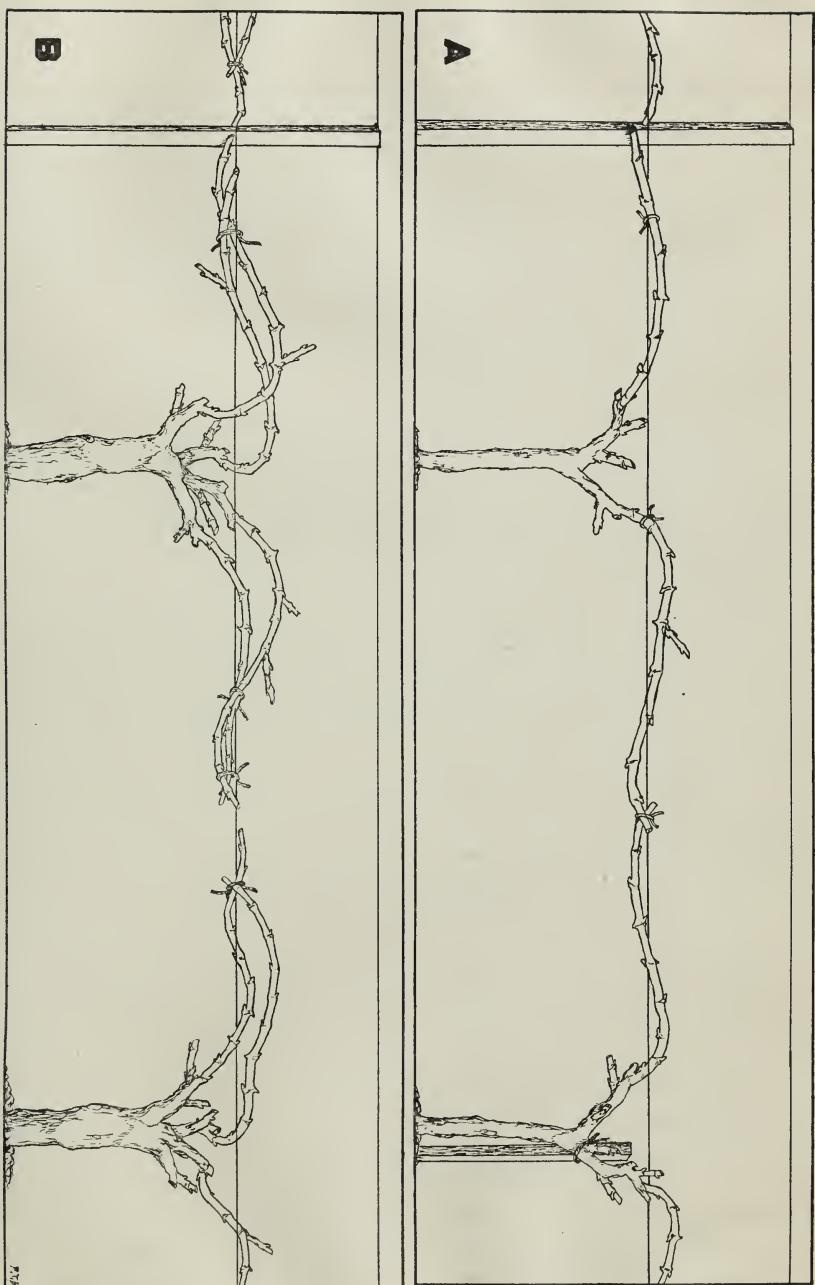


Fig. 9.—Pruning and tying the trellised vines. *A*, Third winter pruning; *B*, fourth and later winter pruning.

amount of hoeing and other expensive hand work, and are subject to injuries from the cultivating implements, which result in smaller crops and shorter lived vines.

All the fruit canes are tied to the lower wire. The use of the upper wire is to support the growing shoots during the summer to protect them from wind injury and to keep the grapes off the ground.

The canes should be looped over the wire or turned once around it. This will prevent the weight of the fruit from breaking the twine with which they are tied to the wire. They should not be twisted around the wire, for if this is done, they are very troublesome to remove at the following winter pruning (see Fig. 9, *A*).

3. PRUNING BEARING VINES

In the fourth year, the vines should be practically in full bearing, and the regular form of pruning for mature vines commences. This consists in leaving two to four fruit canes averaging four feet in length, and four to six renewal spurs of one to two buds each (see Fig. 9, *B*).

Fruit Canes.—A fruit cane should be of well-ripened wood, of good thickness, but not over-grown. Any laterals with well-matured buds, which it may have, should be left and cut back to short spurs of one or two buds, if not over a third of an inch thick and to three or four if thicker (see Fig. 9).

The length of the fruit canes should be from two to five feet. The thicker and more vigorous they are, the longer they should be. They should not extend beyond the ends of the canes of the next vine.

These rules will give a maximum length of fruit wood for a single vine of about sixteen feet. This is ample for the largest crop for a vine in vineyard form. Many vines in the experiment vineyard with less than this length of fruit wood have borne 80, 90, and over 100 pounds of grapes. Nothing is to be gained by making the canes longer or more numerous and excess in this respect tends to weaken the vine and to prevent the production of good fruit wood for the following year.

It is usually supposed that water sprouts, that is, canes from the old wood, are not suitable for fruit canes and that a fruit cane should grow out of two-year-old wood. Some limited tests with the Sultanina indicate that for this variety at least, there is little difference. However, properly pruned vines produce few water sprouts and it is nearly always possible to obtain all the fruit canes required without using them.

Renewal Spurs.—The renewal spurs are intended to produce canes for the following year. As some of them may fail to produce suitable canes, a few more are left than the number of canes needed. They should, where possible, be chosen nearer the head of the vine than the fruit canes, in order to prevent the vine from spreading too rapidly. No spurs should be left which project out into the avenues at right angles to the wire of the trellis. The *narrow, fan-shape* of the vine should be *carefully preserved*. Where spurs at right angles to the trellis must be left they should be cut short to the base bud.

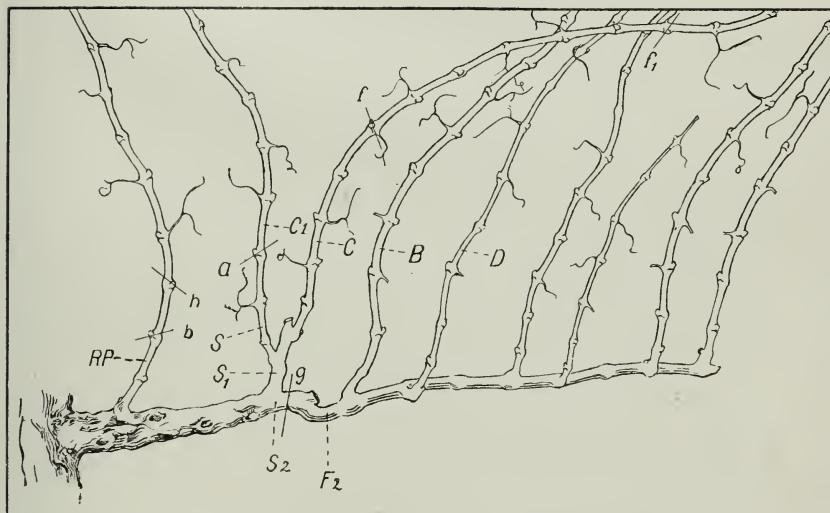


Fig. 10.—Unit of long pruning.

Summer Pruning.—All the seedless raisin grapes are very vigorous and summer pruning may be used more freely than with weaker vines.

All suckers below the ground and water sprouts from the trunk below the head should be carefully removed before they become tough.

Pinching the growing tips of the shoots on the fruit canes when they are eighteen to twenty-four inches long and the blossom bunch is well formed helps the setting of the fruit and increases the size of the berries. Topping or cutting off about twelve inches of the shoots from the renewal spurs when they are three or four feet long promotes the growth of laterals which give excellent fruit buds for the following year.

The pruning of a bearing vine, in short, consists in leaving a sufficient number of fruit canes to bear as large a crop of grapes as the vine can bring to perfection without being weakened; in leaving enough spurs to provide fruiting wood for the following season; and in having these so placed that the form of the vine will be maintained or improved.

To do this properly requires some care and experience. Each arm, of which there should be from three to four on each vine, is treated according to the same principles, which are those indicated in figure 10.

This figure represents a single well-developed arm ready for the winter pruning. *F2* is the fruit cane which has just borne its crop. *S1* is the accompanying renewal spur. In pruning, the old fruit cane is removed at *g*. A new fruit cane (*C*) is formed from the upper cane on the old spur and cut back to *f* or *f1* or to some intermediate point, according to its vigor. A lower shoot on the same spur is cut back to *a* or lower to form the new spur *S*.

This is the normal treatment for a properly developed arm. Many arms have, however, defects which make modifications of this treatment necessary. If no good fruit cane has developed on the old spur *S1*, a fruit cane can be made from one of the canes on the old fruit cane *F2* as, for example, *B* or *D*. If the arm is weak and has no good canes, a fruit cane should not be left, but only one or two spurs as *RP* and *S*. These will produce little or no crop, but the arm will be invigorated and a good crop will be produced the following season. If the arm is becoming too long, like the arm in the figure, the renewal spur should be left as near the head of the vine as possible as at *RP*.

This method is suited to all the seedless raisin grapes, Sultanina, Sultana, Black Corinth, and White Corinth. It is also suitable for any vigorous variety which requires long pruning, but must be used with discretion, as the vines will otherwise be weakened and after one or two good crops, they may cease to bear or even die. Any signs of weakening should be followed by shorter pruning, shorter and fewer fruit canes or even no fruit canes at all for one year.